

AMENDMENTS TO THE CLAIMS:

Claims 1-51 (cancelled)

52. (New) A component mounting method comprising:

for each one of a plurality of sub-boards, with said plurality of sub-boards defining a multiple board and each of said plurality of sub-boards having an identical circuit pattern,

(i) using identical removable suction nozzles, of component holding devices movable in an X - Y plane, to simultaneously pick up components or individually pick up components such that said components are held by said suction nozzles, and then

(ii) placing said components onto said one of said plurality of sub-boards; then replacing one of said suction nozzles with another suction nozzle; and then

using said another suction nozzle to mount other components onto said each one of said plurality of sub-boards.

53. (New) A component mounting method comprising:

for a plurality of sub-boards, with said plurality of sub-boards defining a multiple board and each of said plurality of sub-boards having an identical circuit pattern,

(i) using removable suction nozzles, of component holding devices movable in an X - Y plane, to simultaneously pick up components of an identical type or individually pick up components of an identical type such that said components are held by said suction nozzles, and then

(ii) successively placing said components onto ones of said plurality of sub-boards, respectively; and then

mounting other components onto said ones of said plurality of sub-boards.

54. (New) A component mounting apparatus comprising:

component holding devices movable in an X - Y plane, said component holding devices having identical removable suction nozzles, with said component holding devices being constructed and arranged for

(i) for each one of a plurality of sub-boards, with the plurality of sub-boards defining a multiple board and each of the plurality of sub-boards having an identical circuit pattern,

(a) allowing said suction nozzles to simultaneously pick up components or individually pick up components such that these components are held by said suction nozzles, and then

(b) allowing said suction nozzles to place the components onto the one of the plurality of sub-boards; then

(ii) allowing one of said suction nozzles to be replaced with another suction nozzle; and then

(iii) allowing the another suction nozzle to mount other components onto each one of the plurality of sub-boards.

55. A component mounting method comprising:

(i) moving a transfer head on which are mounted component holding devices;

(ii) using said component holding devices to hold components received from a component feed section having arrayed thereon a plurality of components; and then

(iii) lowering said component holding devices over component placement positions of a circuit board so as to place said components onto said circuit board,

wherein prior to either one of (ii) and (iii), said component holding devices are moved independently of one another so as to adjust intervals between adjacent ones of said component holding devices such that these intervals become coincident, respectively, with different array intervals intended for said components, which different array intervals correspond to a respective either one of the holding of said components by said component holding devices and the placing of said components onto said circuit board via lowering of said component holding devices.

56. (New) The component mounting method according to claim 55, wherein

prior to (ii), said component holding devices are moved independently of one another so as to adjust intervals between said adjacent ones of said component holding devices such that these intervals become coincident, respectively, with said different array intervals intended for said

components, which are array positional intervals of component array of said component feed section.

57. (New) The component mounting method according to claim 55, wherein prior to (iii), said component holding devices are moved independently of one another so as to adjust intervals between said adjacent ones of said component holding devices such that these intervals become coincident, respectively, with said different array intervals intended for said components, which are array positional intervals of said component placement positions on said circuit board.

58. (New) The component mounting method according to claim 55, further comprising: prior to said component holding devices being moved independently of one another so as to adjust intervals between adjacent ones of said component holding devices, obtaining array positional information intended for said components and using this obtained array positional information to determine intended intervals between said adjacent ones of said component holding devices, wherein moving of said component holding devices independently of one another so as to adjust intervals between said adjacent ones of said component holding devices results in said intervals between said adjacent ones of said component holding devices becoming equal to said intended intervals.

59. (New) The component mounting method according to claim 58, wherein obtaining array positional information intended for said components comprises reading array positional information, intended for said components, previously stored in a storage device.

60. (New) The component mounting method according to claim 58, wherein obtaining array positional information intended for said components comprises obtaining array positional information, intended for said components, as recognized by a component-array-positional-information recognition device of said transfer head.

61. (New) The component mounting method according to claim 55, wherein moving of said component holding devices independently of one another so as to adjust intervals between said adjacent ones of said component holding devices occurs during movement of said transfer head.

62. (New) A component mounting apparatus comprising:
a movable transfer head on which are mounted component holding devices, said transfer head being constructed and arranged for

(i) allowing said component holding devices to hold components received from a component feed section having arrayed thereon a plurality of components; and then

(ii) allowing said component holding devices to be lowered over component placement positions of a circuit board so as to place the components onto the circuit board;

a component-holding-device moving mechanism on said transfer head and operable to move said component holding devices so as to adjust array intervals of said component holding devices independently of one another; and

a control section for

(i) prior to either one of

(a) said component holding devices holding the components received from the component feed section, and

(b) said component holding devices being lowered over the component placement positions of the circuit board,

causing said component-holding-device moving mechanism to be driven so as to move said component holding devices independently of one another such that respective intervals between adjacent ones of said component holding devices are set to desired intervals which are coincident with array intervals intended for the components, which array intervals correspond to a respective either one of the holding of the components by said component holding devices and the placing of the components onto the circuit board via lowering of said component holding devices, and then

(ii) causing said component holding devices to hold the components received from the component feed section when the array intervals intended for the components correspond to the holding of the components by said component holding devices, and

(iii) causing said component holding devices to be lowered over the component placement positions of the circuit board when the array intervals intended for the components correspond to the placing of the components onto the circuit board via lowering of said component holding devices.

63. (New) The component mounting apparatus according to claim 62, wherein said control section is for

prior to said component holding devices holding components received from the component feed section, causing said component-holding-device moving mechanism to be driven so as to move said component holding devices independently of one another such that the respective intervals between the adjacent ones of said component holding devices are set to the desired intervals which are coincident with the array intervals, intended for the components, that correspond to the holding of the components by said component holding devices, which array intervals are array positional intervals of component array of the component feed section, and then

causing said component holding devices to hold the components received from the component feed section.

64. (New) The component mounting apparatus according to claim 62, wherein said control section is for

prior to said component holding devices being lowered over the component placement positions of the circuit board, causing said component-holding-device moving mechanism to be driven so as to move said component holding devices independently of one another such that the respective intervals between the adjacent ones of said component holding devices are set to the desired intervals which are coincident with the array intervals, intended for the components, that correspond to the placing of the components onto the circuit board via lowering of said component holding devices,

which array intervals are array positional intervals of the component placement positions on the circuit board, and then

causing said component holding devices to be lowered over the component placement positions of the circuit board.

65. (New) The component mounting apparatus according to claim 62, further comprising:
an arithmetic section for, prior to said component-holding-device moving mechanism being driven so as to move said component holding devices independently of one another, determining intended array intervals for the components based upon array positional information intended for the components, which intended array intervals correspond to a respective either one of the holding of the components by said component holding devices and the placing of the components onto the circuit board via lowering of said component holding devices,

wherein said control section is for causing said component-holding-device moving mechanism to be driven so as to move said component holding devices independently of one another such that the respective intervals between the adjacent ones of said component holding devices are set to the desired intervals, with the desired intervals being equal to the intended array intervals.

66. (New) The component mounting apparatus according to claim 65, further comprising:
a storage device for previously storing the array positional information intended for the components,

wherein said arithmetic section is for determining the intended array intervals for the components based upon the array positional information as read from said storage device.

67. (New) The component mounting apparatus according to claim 65, further comprising:
a component-array-positional-information recognition device on said transfer head and operable for recognizing component array positional information corresponding to the component placement positions,

wherein said arithmetic section is also for determining intended intervals between said adjacent ones of said component holding devices based upon the component array positional information as recognized by said component-array-positional-information recognition device.

68. (New) The component mounting apparatus according to claim 62, wherein said control section is for causing said component-holding-device moving mechanism to be driven so as to move said component holding devices independently of one another while said transfer head is moving.

69. (New) A component mounting method comprising:
(i) moving a transfer head on which are mounted component holding devices;
(ii) using said component holding devices to hold components received from component feed sections having arrayed thereon a plurality of components; and then
(iii) lowering said component holding devices over component placement positions of a circuit board so as to place said components onto said circuit board,
wherein prior to (ii), said component feed sections are moved such that intervals of said component feed sections become coincident with intervals between adjacent ones of said component holding devices.

70. (New) A component mounting apparatus comprising:
a movable transfer head on which are mounted component holding devices, said transfer head being constructed and arranged for
(i) allowing said component holding devices to hold components received from component feed sections having arrayed thereon a plurality of components; and then
(ii) allowing said component holding devices to be lowered over component placement positions of a circuit board so as to place the components onto the circuit board;
a component-feed-section moving mechanism for moving said component feed sections; and
a control section for

(i) prior to said component holding devices holding the components received from the component feed sections, causing said component-feed-section moving mechanism to be driven so as to move said component feed sections such that intervals between adjacent ones of said component feed sections are adjusted and become coincident with intervals between adjacent ones of said component holding devices, and then

(ii) causing said component holding devices to hold the components received from the component feed sections.